

What is claimed is:

1. A power control system for a recreational vehicle comprising:
a connector adapted for receiving electrical current from a source of shore power, the connector for connecting the recreational vehicle to the source of shore power;
a sensor for automatically determining the available level of shore power input to the recreational vehicle; and
means for setting an electrical system not to exceed the sensed available amount of shore power.
2. The power control system of claim 1 wherein the shore power is determined by a phase difference between at least two phases of the shore power.
3. The power control system of claim 2 further comprising a rechargeable power source wherein the amount of current used to recharge the rechargeable power source is automatically adjusted based on the amount of available shore or gen. power.
4. The power control system of claim 3 wherein the rechargeable power source includes a battery.
5. The power control system of claim 3 wherein the rechargeable power source includes a capacitor.
6. The power control system of claim 3 wherein the rechargeable power source includes an inverter.
7. A control system for a plurality of devices in a vehicle, the control system comprising:

a network having:

a first node associated with a first device of a plurality of devices;

a second node associated with a second device of the plurality of devices;

a microprocessor for running a set of commands to control the first device and the second device, wherein the network controls electrical loads.

8. The control system of claim 3 wherein the network controls the sources of electrical energy.

9. The control system for a plurality of devices in a vehicle of claim 3 further comprising memory accessible by the microprocessor for storing data associated with the first device and the second device.

10. The control system for a plurality of devices in a vehicle of claim 9 wherein the memory accessible by the microprocessor is used for storing data associated with the vehicle.

11. The control system for a plurality of devices in a vehicle of claim 10 wherein the memory accessible by the microprocessor is used for storing vehicle identification data or appliance information.

12. The control system for a plurality of devices in a vehicle of claim 10 wherein the memory accessible by the microprocessor is used for storing service reminders associated with the vehicle.

13. The control system for a plurality of devices in a vehicle of claim 10 wherein the memory accessible by the microprocessor is used for storing service reminders associated with at least one of the plurality of devices associated with the vehicle.

14. The control system for a plurality of devices in a vehicle of claim 9 wherein the memory accessible by the microprocessor is used for storing a fault message.

15. The control system for a plurality of devices in a vehicle of claim 14 wherein the fault message is associated with the vehicle.

16. The control system for a plurality of devices in a vehicle of claim 14 wherein the fault message is associated with at least one of the first device or the second device.

17. The control system for a plurality of devices in a vehicle of claim 14 wherein the fault message is downloadable.

18. The control system for a plurality of devices in a vehicle of claim 10 wherein the memory accessible by the microprocessor is used for storing trip information associated with the vehicle.

19. The control system for a plurality of devices in a vehicle of claim 10 wherein the memory accessible by the microprocessor is used for storing a plurality of service sites and a plurality of service site locations.

20. The control system for a plurality of devices in a vehicle of claim 19 further comprising a global positioning system, wherein the microprocessor determines the service site which is closest of the stored plurality of service sites.

21. The control system for a plurality of devices in a vehicle of claim 9 wherein the control system stores a load profile of at least one of the first and second devices.

22. The control system of claim 21 wherein the saved load profile is compared to a current load profile of the at least one of the first and second devices.
23. The control system of claim 22 wherein a fault signal is produced when the current load profile varies from the saved load profile by a desired amount.
24. The control system of claim 9 wherein the control system stores a current profile of the at least one of the first and second devices.
25. The control system of claim 24 wherein an overcurrent condition associated with the at least one of the first and second devices results in a diagnostic fault signal.
26. The control system for a plurality of devices in a vehicle of claim 7 wherein one of the first and second nodes is a load control node for controlling loads associated with the recreational vehicle.
27. The control system for a plurality of devices in a vehicle of claim 7 wherein the load control node can also monitor power demand.
28. The control system for a plurality of devices in a vehicle of claim 7 wherein the load control node can monitor demand from the first device and the second device, the control system capable acting through the control node of the control system to disable one of the first device or the second device when the power demand exceeds a level of available power.
29. The control system for a plurality of devices in a vehicle of claim 7 wherein the load control node can monitor demand from the first device and the second device, the control system capable acting through the control node of the control

system to disable one of the first device or the second device when the power demand exceeds a level of available power for a predetermined amount of time.

30. The control system for a plurality of devices in a vehicle of claim 27 wherein the control node can monitor demand from the first device and the second device, the control system capable acting through the control node of the control system to enable one of the first device or the second device when the power demand is less than the level of available power.

31. The control system for a plurality of devices in a vehicle of claim 7 wherein the load control node can monitor demand from the first device and the second device, the control system capable acting through the control node of the control system to disable one of the first device or the second device in anticipation of a condition when the power demand exceeds a level of available power.

32. The control system for a plurality of devices in a vehicle of claim 27 wherein the load control node can monitor demand from the first device and the second device, the control system capable acting through the load control node of the control system to disable one of the first device or the second device based on a prioritization in anticipation of a condition when the power demand exceeds a level of available power.

33. The control system for a plurality of devices in a vehicle of claim 7 further comprising:

a first source of power; and

a second source of power associated with the load control node, wherein the load control node monitor demand from the first device and the second device, the load control capable of enabling the second source of power in anticipation of a condition when the power demand exceeds a level of available power from the first source of power.

34. The control system for a plurality of devices in a vehicle of claim 33 further comprising a third source of power associated with the load control node, wherein the load control node monitors demand from the first device, the second device, and the third device, the load control capable of enabling at least one of the first source of power, the second source of power, or the third source of power in anticipation of a condition when the power demand exceeds a level of available power from one of the first source of power, the second source of power, or the third source of power.

35. The control system for a plurality of devices in a vehicle of claim 33 wherein the second source of power includes an inverter.

36. The control system for a plurality of devices in a vehicle of claim 33 wherein the second source of power includes a battery.

37. The control system for a plurality of devices in a vehicle of claim 33 wherein the second source of power includes a capacitor.

38. The control system for a plurality of devices in a vehicle of claim 35 wherein the second source of power is a battery, the microprocessor acting under a set of instructions capable of monitoring battery level and controlling the charging and discharging of the battery.

39. The control system for a plurality of devices in a vehicle of claim 33 wherein the second source of power is a fuel cell.

40. The control system for a plurality of devices in a vehicle of claim 33 wherein the second source of power is a motor generator.

41. The control system for a plurality of devices in a vehicle of claim 34 wherein the second source of power is a motor generator and the third source of power is a motor generator.

42. The control system for a plurality of devices in a recreational vehicle of claim 35 wherein the set of instructions for the microprocessor includes a schedule of times during which the motor generator can be enabled.

43. The control system for a plurality of devices in a recreational vehicle of claim 7 further comprising:

a master control unit; and

a display attached to the master node, the display capable of displaying information from the first and second devices.

44. The control system for a plurality of devices in a vehicle of claim 7 further comprising a tank level node adapted to monitor the level of at least one tank associated with the vehicle.

45. The control system for a plurality of devices in a vehicle of claim 7 further comprising:

an engine node for receiving information from the engine of the vehicle.

46. The control system for a plurality of devices in a vehicle of claim 45 wherein the information received from the engine includes fault codes associated with the engine.

47. The control system for a plurality of devices in a recreational vehicle of claim 7 further comprising a transfer switch node for receiving information from the first and second devices of the recreational vehicle.

48. The control system for a plurality of devices in a vehicle of claim 47 wherein the information from the first and second devices includes voltages and currents associated with the first and second devices.

49. The control system for a plurality of devices in a vehicle of claim 48 further comprising a battery, wherein the transfer switch node receives battery voltage information.

50. The control system for a plurality of devices in a vehicle of claim 48 further comprising a battery and an inverter, wherein the control system also includes an inverter interface node which is in electrical communication with the transfer switch node receives inverter information.

51. The control system for a plurality of devices of claim 7 wherein one of the first device and the second device include air conditioning equipment, the control system further including:

a temperature sensor; and

a modem, wherein the control system dials a predetermined number in response to a temperature in the recreational vehicle being beyond a threshold value.

52. The system for a plurality of devices of claim 7 wherein one of the first device and the second device include air conditioning equipment, the security system further including:

a temperature sensor; and

a modem, wherein the security system dials a predetermined number in response to a temperature in the recreational vehicle being beyond a threshold value.

53. The system for a plurality of devices of claim 7 further comprising a carbon monoxide detector for a plurality of devices, wherein one of the first device and the second device include heating equipment, the system further including a modem,

wherein the system dials a predetermined number in response to a carbon monoxide level in the vehicle being beyond a threshold value.

54. The system for a plurality of devices of claim 7 further comprising:
a first device associated with the vehicle;
a second device associated with the vehicle;
a detector associated with at least one of a first device or a second device,
wherein one of the first device and the second device include an apparatus for
producing a signal based on a condition of the at least one of the first device or
the second device; and
a modem, wherein the system dials a predetermined number in response to a
condition signal from at least one of the first device and the second device of the
vehicle.

55. The system of claim 54 wherein the predetermined number dials a pager
with messaging capability, the system producing a message associated with the
condition signal when the system dials the predetermined number.

56. The system of claim 54 wherein the system produces a message associated
with the condition signal when the system dials the predetermined number.

57. The system of claim 54 wherein the first device is a water heater.

58. The system of claim 54 wherein the first device is a motor genset.

59. The system of claim 54 wherein the first device is a gas tank.

60. The system of claim 54 wherein the first device is an air conditioner.

61. The system of claim 54 wherein the first device is a water tank

62. The system of claim 54 wherein the first device is an inverter.
63. The system of claim 54 wherein the first device is a fuel cell.
64. The system of claim 54 wherein the first device is an engine for moving the vehicle.
65. The system of claim 64 wherein the second device is a transmission associated with the engine for moving the vehicle.
66. The system of claim 54 wherein the first device is a fuel tank.
67. The control system for a plurality of devices of claim 7 wherein one of the first device and the second device include heating equipment, the control system further including:
 - a temperature sensor; and
 - a modem, wherein the control system dials a predetermined number in response to a temperature in the recreational vehicle being beyond a threshold value.
68. The control system for a plurality of devices of claim 40 further including a carbon monoxide sensor, wherein the control system disables a motor generator in response to a carbon monoxide level in the recreational vehicle being above a threshold value.
69. The control system for a plurality of devices in a recreational vehicle of claim 9 wherein the memory accessible by the microprocessor stores fault codes associated with the first device and the second device.

70. The control system for a plurality of devices in a recreational vehicle of claim 9 wherein the memory accessible by the microprocessor stores diagnostic data associated with at least the first device and the second device.

71. A recreational vehicle comprising:
a chassis which includes a living space;
an electrical system for providing electrical power to the living space;
an air conditioner for cooling the living space;
a heater for heating the living space;
a plurality of appliances within the living space attached to the electrical system;
an engine for moving the recreational vehicle;
a motor generator for supplying power to the recreational vehicle;
a connector for connecting the electrical system of the recreational vehicle to an external power source; and
a local area network system electrically connected to the air conditioner, the heater, the plurality of appliances, and the motor generator, the local area network managing the power provided to the to the air conditioner, the heater, the plurality of appliances and for enabling the motor generator when available power through the connector drops below a threshold level.

72. The recreational vehicle of claim 71 wherein the local area network system includes an information handling system.

73. The recreational vehicle of claim 72 wherein the information handling system includes a microcontroller.

74. The recreational vehicle of claim 72 wherein the information handling system includes a computer.

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75. The recreational vehicle of claim 72 wherein the information handling system controls the time when the motor generator can operate.
76. The recreational vehicle of claim 72 wherein the information handling system controls the time when the motor generator can operate, wherein the motor generator is allowed to operate during a period including normal waking hours.
77. The recreational vehicle of claim 71 further comprising a display positioned within the living space, the display showing data related to the air conditioner, the heater, the plurality of appliances, the motor generator and the engine.
78. The recreational vehicle of claim 77 further comprising:
a plurality of tanks;
a plurality of level sensors for sensing the level in the plurality of tanks, the display also displaying the levels of the plurality of tanks.
79. The recreational vehicle of claim 71 further comprising:
a display positioned within the living space; and
a microprocessor for executing commands related to the air conditioner, the heater, the plurality of appliances, the motor generator and the engine.
80. The recreational vehicle of claim 79 wherein the microprocessor commands relate to a diagnostic test for the various components under control of the control system, said display used to show the results of the diagnostic test.
81. The recreational vehicle of claim 79 wherein the microprocessor commands include fetching error codes stored in memory associated with the motor generator and the engine.
82. A recreational vehicle comprising:

a chassis which includes a living space;
a plurality of devices associated with the recreational vehicle;
a display positioned within the living space for displaying information related to the plurality of devices.

83. The recreational vehicle of claim 82 wherein the plurality of devices includes a tank having a level, the display capable of displaying an indication of the level within the tank.

84. The recreational vehicle of claim 83 wherein the plurality of devices includes a plurality devices that have an electrical load associated therewith, the display capable of displaying an indication of the load associated with one of the plurality of devices.

85. The recreational vehicle of claim 83 wherein the plurality of devices includes a plurality devices that have an electrical load associated therewith, the display capable of displaying an indication of the load associated with the plurality of devices.

86. The recreational vehicle of claim 82 wherein the plurality of devices includes a plurality devices that produce electrical power, the display capable of displaying an indication of the electrical power available.

87. The recreational vehicle of claim 82 further comprising an engine for moving the recreational vehicle, wherein the engine includes a memory for storing information related to the engine, the display capable of displaying the engine information.

88. The recreational vehicle of claim 88 further comprising an engine for moving the recreational vehicle, wherein the recreational vehicle further comprises:

a microprocessor; and
memory accessible by the microprocessor, wherein diagnostics associated with the engine are stored in the memory, the microprocessor capable of displaying the engine diagnostic information on the display.

89. The recreational vehicle of claim 82 further comprising:

a microprocessor; and
memory accessible by the microprocessor, wherein information related to the plurality of devices are stored in the memory, the microprocessor capable of displaying the information on the display.

90. The recreational vehicle of claim 90 wherein the display further comprises:

a main display area; and
a pop-up display area which is positioned over a selected portion of the main display area;
the pop-up display capable of displaying information related to the plurality of devices.

91. The recreational vehicle of claim 91 wherein the pop-up display area displays information related to a fault found in at least one of the plurality of devices.

92. The recreational vehicle of claim 91 wherein the pop-up display area displays information related to an error condition found in at least one of the plurality of devices.

93. The recreational vehicle of claim 91 wherein the pop-up display area displays information related to a predetermined condition in at least one of the plurality of devices.

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94. The recreational vehicle of claim 94 wherein the predetermined condition includes a ground open condition in AC shore power.

95. The recreational vehicle of claim 94 wherein the predetermined condition includes a neutral open condition in AC shore power.

96. The recreational vehicle of claim 94 wherein the predetermined condition includes a ground fault sense condition in AC shore power.

97. The recreational vehicle of claim 94 wherein the predetermined condition includes a switched polarity condition in AC shore power.

98. The recreational vehicle of claim 94 further comprising:
an inverter; and
an inverter interface, wherein the predetermined condition includes a fault signal produced by the inverter and passed over the inverter interface from the inverter.

99. The recreational vehicle of claim 94 further comprising:
a set of commands stored in memory, the commands for testing a plurality of devices associated with the coach and which are in electrical communication with the microprocessor, the commands executable by the microprocessor to test the devices associated with the coach.

100. The recreational vehicle of claim 91 wherein the pop-up display area displays information responsive to a signal from at least one of the plurality of devices.

101. The recreational vehicle of claim 90 wherein the memory contains information related to diagnostics for at least one of the plurality of devices.

102. The recreational vehicle of claim 90 wherein the microprocessor calculates miles per gallon for display on the display device.

103. The recreational vehicle of claim 90 wherein the microprocessor calculates miles to empty for display on the display device.

104. The recreational vehicle of claim 90 wherein the microprocessor calculates miles to destination for display on the display device.

105. The recreational vehicle of claim 90 wherein the memory stores conditions for display on the display device.

106. The recreational vehicle of claim 91 wherein the main display is a video display.

107. The recreational vehicle of claim 91 wherein the main display is a video display directed at a space proximate the rear of the recreational vehicle.

108. A method for servicing a vehicle comprising the steps of:
 receiving a fault signal from a device on a vehicle;
 determining at least one service station capable of servicing the device
 which sent the fault signal;
 dialing, or contacting through other means such as through the web or email,
 the at least one service station to check availability for service.

109. A method for servicing a vehicle of claim 108 further comprising the step of
 setting an appointment for servicing the device when a service station indicates a
 service time is available.

110. The method for servicing a vehicle of claim 108 further comprising the step of checking the availability of another service station when a service station indicates a service is not available.

111. The method for servicing a vehicle of claim 108 further comprising the steps of:

checking the availability of a plurality of service stations; and
displaying a list of service stations available to perform a service.

112. A method for servicing a vehicle comprising the steps of:

receiving a fault signal from a device on a vehicle;
displaying a plurality of service stations capable of servicing the device

which sent the fault signal;

determining when the device could be serviced based on input from the
plurality of service stations;

presenting the service options; and

dialing one service station to set an appointment for servicing the device,
responsive to a selection of one of the service options.

113. A tank system comprising:

a tank;

a display for showing the level of fluid within the tank; and

a plurality of sensors located within the tank, wherein the plurality of sensors
are calibrated by measuring the sensors at a first fluid level and at a second fluid
level and a linear interpolation is made between the first level and the second level.

114. The tank system of claim 114 further comprising an output device for
sending a signal indicative of the level of fluid within the tank for showing on the
display.

115. The tank system of claim 114 wherein one of the first and second fluid levels is an empty tank.

116. The tank system of claim 116 wherein the other of the first and second fluid levels is a full tank.

117. The tank system of claim 115 wherein the output of the output device is a fault signal indicating a low tank level.

118. The tank system of claim 115 wherein the output of the output device is a fault signal indicating a high tank level.

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